



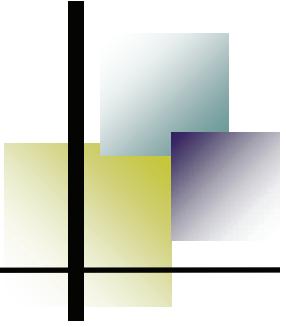
MONTANA DIABETES PROJECT  
**STATE PLAN**

2009-2014





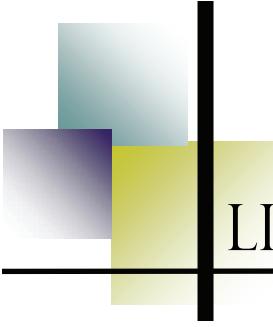
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## ACKNOWLEDGEMENTS

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This state plan was prepared by the Montana Diabetes Project, Montana Department of Public Health and Human Services, in collaboration with the members of the Montana Diabetes Advisory Coalition. The expertise and input provided by the coalition members was the foundation for developing this state plan. We also appreciate the invaluable input from the Montana Cardiovascular Health Program and the Indian Health Service. Lastly, we offer our special thanks to the Cardiovascular Disease & Diabetes Prevention sites along with the many primary care practices, diabetes education programs, clinics, and community health centers across the state.



## LIST OF ACRONYMS

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<b>ABCs:</b>	A1c, Blood Pressure, and LDL-Cholesterol
<b>A1c:</b>	Glycosylated hemoglobin test that measures average blood glucose over the previous 2 to 3 months
<b>AI:</b>	American Indians
<b>BRFSS:</b>	Behavioral Risk Factor Surveillance System
<b>CHD:</b>	Coronary Heart Disease
<b>CKD:</b>	Chronic Kidney Disease
<b>CVHP:</b>	Cardiovascular Health Program
<b>DQCMS:</b>	Diabetes Quality Care Monitoring System
<b>ESRD:</b>	End Stage Renal Disease
<b>LDL-C:</b>	Low Density Lipoprotein Cholesterol
<b>MDP:</b>	Montana Diabetes Project
<b>MTUPP:</b>	Montana Tobacco Use Prevention Program
<b>QDEI:</b>	Quality Diabetes Education Initiative
<b>QI:</b>	Quality Improvement
<b>SDPI:</b>	Special Diabetes Program for Indians



# HIGHLIGHTS OF THE FIVE-YEAR STATE PLAN

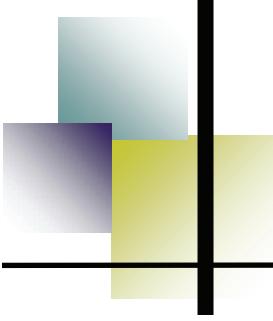
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## Overarching Goals

- Reduce the morbidity and mortality of diabetes and its complications among Montanans.
- Prevent or delay the development of diabetes among Montanans at high risk.
- Improve the quality of life for Montanans with diabetes.

## Key strategies

- Maintain and expand the surveillance systems to monitor the burden of diabetes and assess diabetes care and outcomes.
- Expand cardiovascular disease and diabetes prevention opportunities across the state.
- Improve the quality of care for people with diabetes.
- Increase access to quality diabetes education.
- Establish and maintain effective partnerships to coordinate existing resources to reduce the burden of diabetes through collaborative programs.



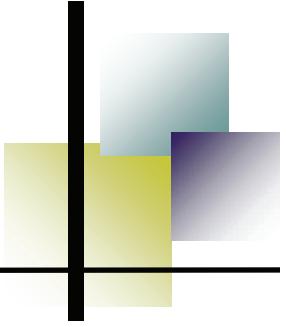
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## Call to Action



The state plan objectives can only be accomplished through the joint efforts of healthcare leaders, insurers, public health agencies, policymakers, healthcare organizations serving Montanans, and engagement of the people of Montana. Our state program is partnering with diabetes stakeholders across the state to decrease the incidence of diabetes as well as the complications. The partners are committed to providing effective diabetes prevention opportunities as well as achieving improvements in diabetes care for our residents. The Montana Diabetes Project (MDP) encourages you to join this effort.



# EXECUTIVE SUMMARY

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## Prevalence of Diabetes

- ◆ Almost 48,000 adults in Montana have diagnosed diabetes —6.4 percent of adults.
- ◆ The rate has been increasing steadily from 2.8 percent in 1990.
- ◆ The rate of diabetes in American Indians is 2.5 times higher than the rate in the general population and has also increased.

## Cardiometabolic Risk Factors

- ◆ Twenty-one percent of all adults were obese according to their reported height and weight.
- ◆ Thirty percent of adults without diabetes reported high cholesterol levels.
- ◆ Twenty-two percent of adults without diabetes reported high blood pressure.
- ◆ Persons with diabetes reported high cholesterol and high blood pressure at least twice as frequently as those without diabetes.

## Diabetes in Pregnancy

- ◆ Almost 3 % of all births listed some form of diabetes with gestational diabetes listed as the major form.
- ◆ Montana Indian women had twice the rate of diabetes in pregnancy compared to white women.
- ◆ Women with a history of gestational diabetes were twice as likely to have pregnancy related diabetes in a subsequent pregnancy up to five years later compared to women without gestational diabetes.

## Diabetes Care

- ◆ Sixty percent of Montana adults with diabetes reported receiving diabetes education classes, and 67 percent monitored their blood sugar at least daily.
- ◆ Sixty- seven percent had received A1c testing twice in the past year; 72 percent an annual eye exam, and 80 percent an annual foot exam.
- ◆ Two-thirds were currently immunized with a yearly influenza shot and one pneumovax.

## Diabetes Complications

- ◆ Hospital discharge rates for diabetes increased in recent years to 136 per 10,000.
- ◆ Diabetes contributed to 45 percent of new and existing ESRD in Montana and 66 percent of non-traumatic lower extremity amputations.
- ◆ Hospital discharge rates for stroke and heart disease with diabetes in Montana were lower than comparable US rates.

## Diabetes Mortality

- ◆ The age-adjusted diabetes mortality rate was 23 per 100,000 with rates in Montana Indians three times higher than that in non-Indians.

# DISEASE BURDEN SUMMARY

In 2008, the Montana Department of Public Health and Human Services (DPHHS) produced a report entitled **DIABETES: The Burden in Montana** describing the burden of diabetes and associated risks in the state.<sup>1</sup> The report, created using data from the Montana Office of Vital Statistics, Behavioral Risk Factor Surveillance Survey (BRFSS), and hospital discharge data, addressed disease prevalence, risk factors, diabetes in pregnancy, co-morbidities, morbidity, mortality and care indicators. The full report can be accessed online at:  
<http://www.dphhs.mt.gov/PHSD/Diabetes/diabetes-index.shtml>

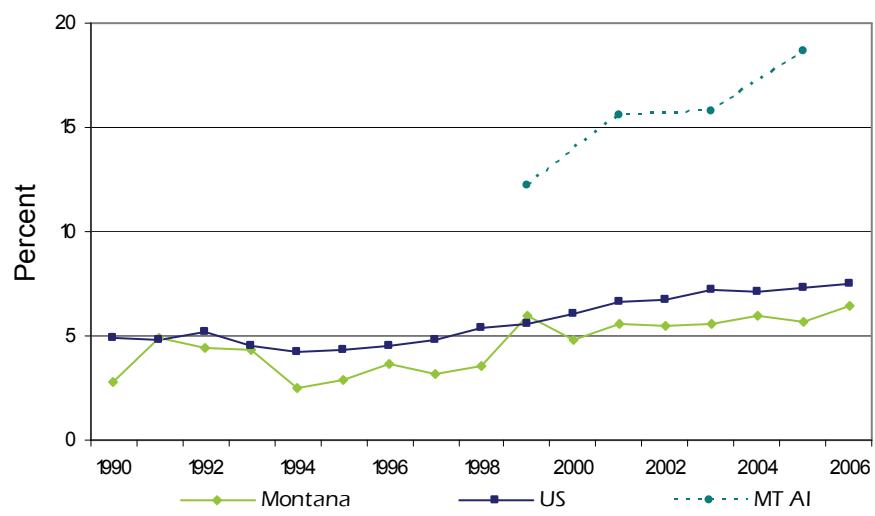
## *Demographics*

The most recent estimate (2006) of Montana's total population is 944,632, resulting in a population density of just over six persons per square mile. The median age is 39.5 years and 14 percent of Montana residents are 65 years of age or older. Over 90 percent of Montana's population is white. American Indians, the state's largest minority group, comprise 6.8 percent of Montana's population.

## *Prevalence*

Since 1990, diabetes prevalence in the US and Montana has continued to rise. In 2006, 6.4 percent of Montana adults reported having diabetes—about 48,000 adults. In 2005, 18.7 percent of Montana Indian adults (about 10,000) reported a diagnosis of diabetes; about 2.5 times greater than the general Montana population. Though American Indians represent only 6.8 percent of the Montana population, they contributed about 25 percent of prevalent diabetes cases in 2005.

Figure 1. Prevalence of diabetes for all Montanans, Montana Indians and the US, 1990 to 2006.

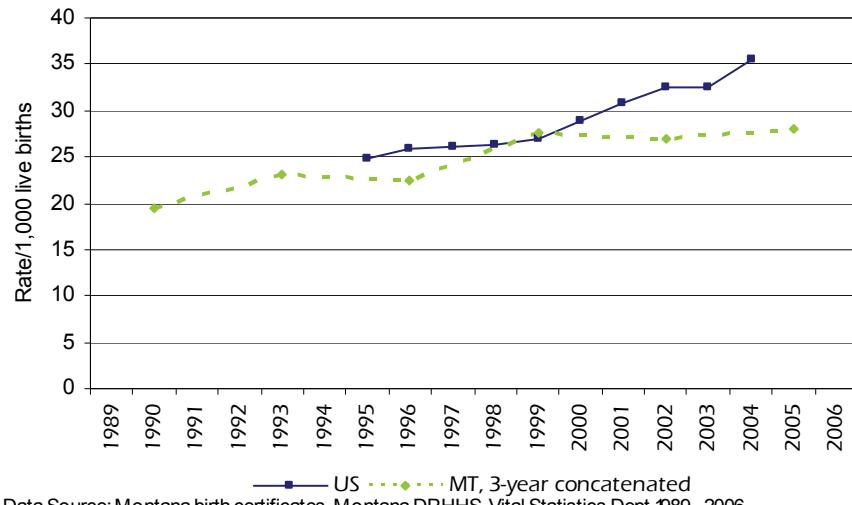


Data source: Montana BRFSS, Montana DPHHS, Health Planning Section, 1990-2006.  
Montana American Indian adapted-BRFSS, Montana DPHHS, 1999, 2001, 2003 and 2005.

\*Question changed in 1994 to exclude females with gestational diabetes.

# DISEASE BURDEN SUMMARY

Figure 2. Rate of diabetes during pregnancy in Montana and the US, 1989 to 2006.



Data Source: Montana birth certificates, Montana DPHHS, Vital Statistics Dept. 1989 - 2006.  
US: USDHHS, CDC, NCHS, Division of Vital Statistics. 1995-2004.

## *Diabetes during pregnancy*

The prevalence of any form of diabetes during pregnancy for the time period 2004 to 2006 was 2.8 percent of live births; about 300 cases per year. Most of these pregnancies were affected by gestational diabetes (2.3 percent); 0.5 percent were attributed to pre-existing diabetes. The most recent estimates of the prevalence rates of gestational and pre-existing diabetes in Montana were 26 and 5 per 1,000 live births, respectively.

The rate of diabetes in pregnancy in Montana has increased over the past 17 years. The rate of diabetes during pregnancy increased 27 percent between 1995 and 2006, from 22 to 28 per 1,000 live births.

Older mothers (30 years and older) had 8 times greater risk of having any form of diabetes during pregnancy when compared to mothers less than 20 years old (OR: 7.58 [5.08-11.72]). Montana Indian women had a 67 percent greater risk of having diabetes during pregnancy compared to white women (OR: 1.67 [1.38-2.02]). Over time, diabetes during pregnancy increased at the same rate for both Montana Indian and white women.

## *Modifiable risk factors*

Overweight and obese individuals are at increased risk of developing type 2 diabetes, high cholesterol and high blood pressure. In 2006, 21 percent of all Montana adults were obese. Thirty-eight percent of Montana Indians were obese, almost twice the state prevalence. Montanans with diabetes are 2-3 times more likely to report having high blood pressure or high cholesterol compared to Montanans without diabetes.

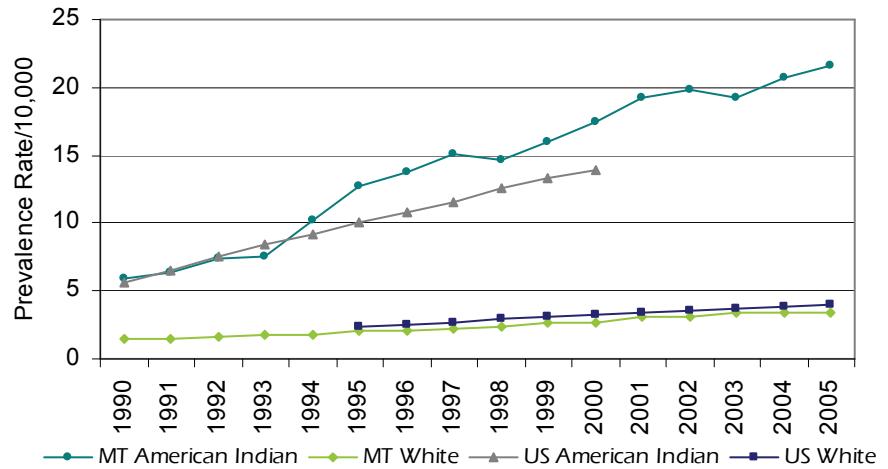
# DISEASE BURDEN SUMMARY

## *Complications*

### *Chronic Kidney Disease (CKD) and End Stage Renal Disease (ESRD)*

From 2000 to 2003, the trends for both CKD and ESRD discharge rates with a concurrent diabetes diagnosis were flat at approximately 15 and 7 per 10,000, respectively. But from 2003 to 2006, CKD and ESRD discharge rates increased exponentially to 14 and 21 per 10,000, respectively.

Figure 3. Crude prevalence rates of end-stage renal disease (ESRD) associated with diabetes mellitus by race, Montana and the US, 1990-2005.



Data source: U.S. Renal Data System, USRDS 2006 Annual Data Report: Atlas of End-Stage Renal Disease in the United States, NIH, NIDDK, Bethesda, MD, 2006.

In 2005, 45 percent of all ESRD in Montana was attributed to diabetes. The diabetes-related ESRD prevalence rate in Montana Indians was 7 times the rate of whites in Montana (22 per 10,000 in Montana Indians compared to 3 per 10,000 in Montana whites). Alarmingly, Montana Indians contributed 25 percent of all diabetes-related ESRD in Montana.

## *Cardiovascular Disease*

The age-adjusted hospital discharge rate for a primary diagnosis of coronary heart disease with a secondary diagnosis of diabetes remained at approximately 11 per 10,000 in Montana from 2000 to 2006. The age-adjusted hospital discharge rate for a primary diagnosis of stroke with a secondary diagnosis of diabetes remained at approximately 5 per 10,000 in Montana from 2000 to 2006.

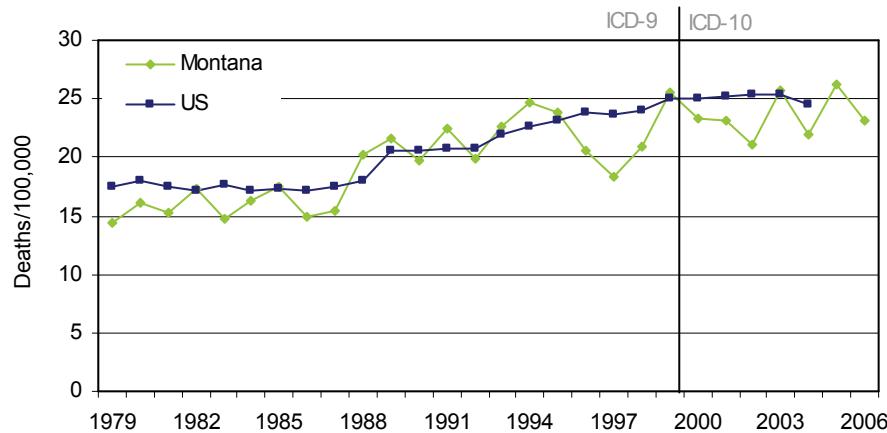
## *Mortality*

The diabetes mortality rate (diabetes as the underlying cause of death) in Montana was similar to the general US population. For Montanans, the age-adjusted diabetes mortality rate increased from 14 per 100,000 in 1979 to 23 per 100,000 in 2000. Montana rates have remained at approximately 23 per 100,000 since 2000.

The age-adjusted diabetes mortality rate for Montana Indians was three times higher than

# DISEASE BURDEN SUMMARY

Figure 4. Age-adjusted diabetes mortality rates for Montana and the general US population, 1979-2006.



MT (1979-1989) and US (1979-2004) data source: Compressed Mortality file, CDC Wonder (accessed: 6/27/07)

Diabetes mortality rates for US not available for 2005

MT (1990-2006) data source: Montana DPHHS, Office of Vital Statistics

death but not listed as the underlying cause of death, the most common underlying cause of death among both whites and Montana Indians was cardiovascular disease; accounting for nearly 50 percent of this subset of diabetes-related deaths

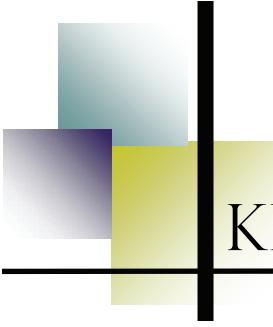
## Discussion and Conclusion

Prevalence of diabetes has increased in Montana. Cardiometabolic risk factors are common in those at-risk for diabetes as well as heart disease. Diabetes in pregnancy is an additional public health burden and, in the case of gestational diabetes, a risk factor for type 2 diabetes. Diabetes complications are widespread, especially End Stage Renal Disease which has increased alarmingly in Montana, particularly among Montana Indians. Just over eight percent of deaths in Montana are diabetes-related. Diabetes mortality is three times higher in Montana Indians compared to whites. The burden of diabetes in the state indicates the need for concentrated efforts on prevention, treatment and control of diabetes.

the rate of the non-Indian population from 1990-2005.

From 2000 to 2006, 1,694 deaths in Montana listed diabetes as the underlying or principal cause of death. An additional 3,138 deaths listed diabetes as a contributing cause (an age-adjusted rate of 43 per 100,000). These 4,832 diabetes-related deaths represented 8.3 percent of all deaths in Montana during that time period.

For deaths where diabetes was listed as a contributing cause of



## KEY OBJECTIVES AND STRATEGIES

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### Objective 1:

Maintain current measurement procedures and surveillance systems as a means of assessing the burden and successes.

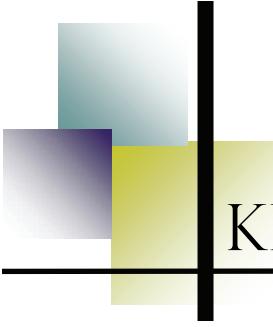
### Strategies:

- ◆ Establish and maintain surveillance of diabetes through available data sources including those listed in Table.
- ◆ Provide data support for Indian Health Service tribal and urban Indian programs.
- ◆ Create and disseminate surveillance reports which summarize information on important diabetes and cardiovascular-related clinical and public health issues.
- ◆ Advocate for improvements in diabetes data collection from multiple sources.
- ◆ Publish and disseminate the comprehensive five-year burden report on diabetes in Montana. This publication has been disseminated to diabetes stakeholders and is available on the MDP website ([www.diabetes.mt.gov](http://www.diabetes.mt.gov)).

# KEY OBJECTIVES AND STRATEGIES

Table. Summary of Montana Diabetes Population Indicators and Data Sources

Population Indicator	Data Source
Diabetes incidence	BRFSS
Diabetes prevalence	BRFSS, Medicaid
Diabetes complications	
◆ ESRD	USRDS, hospital discharge data
◆ CKD	hospital discharge data
◆ Lower extremity amputation	hospital discharge data
◆ CHD	hospital discharge data
◆ Stroke	hospital discharge data
Diabetes care	
◆ Annual A1c screening	BRFSS, DQCMS
◆ Annual LDL screening	BRFSS, DQCMS
◆ Annual foot exam	BRFSS, DQCMS
◆ Annual retinal eye exam	BRFSS, DQCMS
◆ Annual kidney function screening	DQCMS
◆ Annual influenza vaccination	BRFSS, DQCMS
◆ Pneumococcal vaccination	BRFSS, DQCMS
◆ Diabetes self-management training	BRFSS, DQCMS
◆ Self-monitoring blood glucose	BRFSS
◆ Smoking cessation interventions	DQCMS, Diabetes-specific Quit Line data
ABCs	
◆ Average A1c; A1c < 7.0%	DQCMS
◆ High blood pressure	BRFSS, DQCMS
◆ Blood pressure control	DQCMS
◆ High cholesterol	BRFSS, DQCMS
◆ Cholesterol control	DQCMS
Obesity and overweight	BRFSS
Smoking	BRFSS, DQCMS
Pre-diabetes	BRFSS
Diabetes during pregnancy	Birth records, hospital discharge data
Birth outcomes (e.g. birth weight/macrosomia)	Birth records, hospital discharge data
Mortality	Death records



## KEY OBJECTIVES AND STRATEGIES

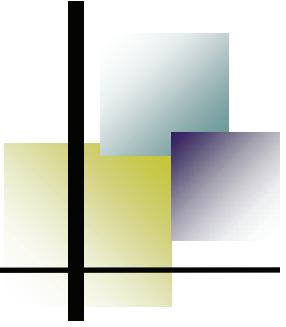
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### Objective 2:

By 2014, increase the percentage of patients with diagnosed diabetes at participating QI sites using Diabetes Quality Care Monitoring System (DQCMS) who meet target A1c, Blood Pressure, Cholesterol (ABCs) goals of A1c <7% (52% to 67%), blood pressure  $\leq$ 130/80 (42% to 57%) and LDL-C  $\leq$ 100 (58% to 73%). Similarly increase the percentage receiving retinal exam, foot exam, annual albuminuria screening (27%-42%) and annual kidney function screening (i.e., serum creatinine, estimated glomerular filtration rate) from 15% baseline established in 2009.

### Strategies:

- ♦ Continue to establish and maintain diabetes registries and support QI at primary care and diabetes education sites at no direct cost. The MDP staff will implement upgrades to DQCMS supporting changes in standards of care and enhancing QI interventions.
- ♦ Continue efforts to improve preventive care and clinical outcomes through collaborative work with QI sites. Pilot QI projects that focus on evidence based interventions to include kidney disease screening, CKD education, and increasing medication adherence to improve blood pressure and A1c management.
- ♦ Partner with the CVH Program to encourage appropriate treatment of high blood pressure and elevated cholesterol levels.
  - ♦ Promote the recommended standards of care for adults with diabetes.
  - ♦ Support practice efforts on blood pressure and cholesterol QI projects in primary care settings.
  - ♦ Provide feedback on results from blood pressure and cholesterol QI projects.
  - ♦ Promote interventions with advancing therapy and practice patterns to improve control of patients' cholesterol levels and blood pressure.

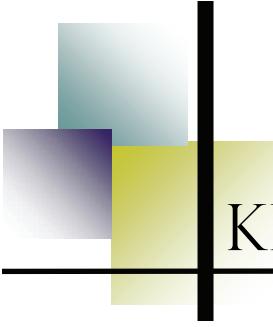


# KEY OBJECTIVES AND STRATEGIES

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## Strategies, continued

- ◆ Partner with the Montana Tobacco Use Prevention Program (MTUPP) to promote tobacco use cessation.
  - ◆ Encourage assessment and counseling of diabetes patients in primary care settings.
  - ◆ Provide educational resources to providers and educators.
- ◆ Recruit additional partners including stakeholders from healthcare systems to facilitate assessment and improvement of the quality of diabetes care to assist hospitals.
- ◆ Continue to publish quarterly QI Reports (see surveillance system strategies).
- ◆ Partner with Community Health Centers to offer health coaching for diabetes management for the Medicaid population.
- ◆ Consult with the Billings Area Indian Health Service, tribes and urban Indian programs to support their efforts to improve diabetes care.



## KEY OBJECTIVES AND STRATEGIES

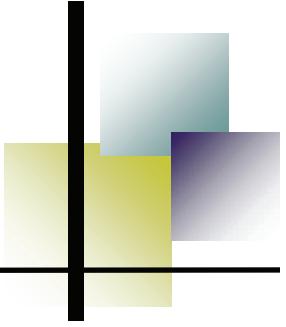
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### Objective 3:

By 2014, provide mentoring support to 25 new diabetes self-management education providers and increase number of recognized diabetes education programs in Montana by eight.

### Strategies:

- ◆ The MDP will continue to provide resources to assist health care professionals in outpatient settings through the Quality Diabetes Education Initiative (QDEI). The QDEI provides resources to assist health care professionals.
  - ◆ Increase skills of individual health care providers through self-study and peer mentoring programs.
  - ◆ Assist health care providers in developing basic diabetes education programs in their settings.
  - ◆ Provide assistance to diabetes education programs that seek certification recognition from approving bodies.
- ◆ Collaborate with diabetes educators and other stakeholders to explore alternative venues for diabetes education such as telemedicine for diabetes education to improve access to remote locations in Montana.



# KEY OBJECTIVES AND STRATEGIES

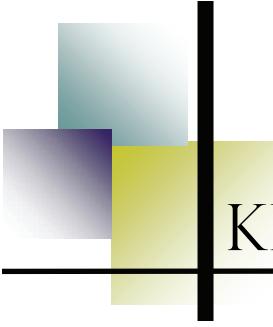
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## Objective 4:

Maintain and continue to establish effective partnerships to coordinate existing diabetes resources.

### Strategies:

- ◆ Organize and foster communication and cooperative efforts among coalition members.
- ◆ Expand membership of the Montana Diabetes Advisory Coalition to include representatives from the media and a retail pharmacy.
- ◆ Facilitate provision of consultation to third-party payors, including self insured employer plans, as their coverage for diabetes evolves to incorporate new preventive programs and equipment.
- ◆ Organize an annual diabetes medical education conference in cooperation with the American Diabetes Association, Billings Area Indian Health Service, the University of Montana Skaggs School of Pharmacy, the University of Washington School of Medicine and the Montana Chapter of the American Association of Diabetes Educators.
- ◆ In cooperation with the Billings Area Diabetes Program, consult with IHS, tribal and urban Indian diabetes coordinators to further the impact of the SDPI.



## KEY OBJECTIVES AND STRATEGIES

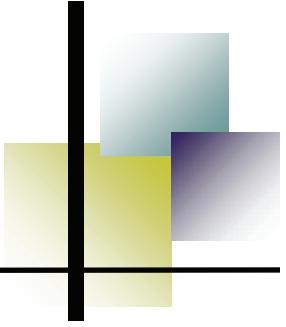
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### Objective 5:

By 2014, implement 16 Montana Cardiovascular Disease and Diabetes Prevention Programs in Montana

#### Strategies:

- ◆ The MDP will continue to partner with four pilot cardiovascular disease and diabetes prevention program sites in Montana to provide technical support and evaluation expertise.
- ◆ Collaborate with four more sites biennially to implement prevention programs in Montana. MDP will support the spread of the diabetes prevention program by coordinating development of a mentoring program for science based prevention program development to include lifestyle coach training.
- ◆ Provide support for data analysis and evaluation of prevention programs.
- ◆ Provide support and technical assistance for prevention program activities and lifestyle coach training for AI.
- ◆ Explore opportunities to partner with other organizations to expand public awareness activities for prevention.
- ◆ Provide a prevention program tracking registry at no direct cost to users with capabilities of producing reports for site use in QI. The registry will be piloted in select sites before being made available to all interested prevention sites across Montana.
- ◆ Explore opportunities to partner with stakeholders to improve follow up and implementation of prevention activities for women diagnosed with gestational diabetes.
- ◆ Determine feasibility and effectiveness of the prevention program to include third party payor reimbursement.



# CONCLUSION

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## The State Diabetes Plan

Controlling levels of blood glucose, blood pressure, blood lipids can reduce the occurrence of complications from diabetes. Studies have found that improved glycemic control benefits people with type 1 or type 2 diabetes. In general, every percentage point drop in A1c (e.g., from 8.0% to 7.0%) reduces the risk of microvascular complications (eye, kidney, and nerve diseases) by 40%. Good blood pressure control in those with diabetes reduces microvascular complications by an estimated 33% and the risk of heart disease or stroke among persons with diabetes by 33-50%. Improved cholesterol or blood lipid control can reduce cardiovascular complications by 20-50%.<sup>2</sup> For these reasons, strategies in the diabetes plan are focused to improve these indicators of diabetes control.

Primary prevention of diabetes and cardiovascular disease is another public health priority in Montana. As noted in the burden data for 2006, 21% of all Montana adults were obese, and 38% of Montana Indians were obese. Overweight and obese individuals are at increased risk of developing type 2 diabetes, high cholesterol, and high blood pressure.<sup>1</sup>

The goals, objectives, and strategies contained in this document represent a public health approach to addressing diabetes in Montana over the next five years. The MDP and its partners acknowledge that diabetes control and prevention is a complex public health problem that must be addressed within a multidimensional framework. Implementing the strategies outlined herein will impact both short and long term diabetes outcomes in the state and improve the lives of Montanans with and at risk for diabetes.

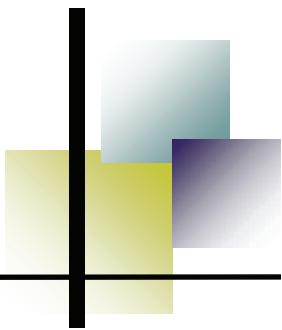


## USING THE STATE PLAN

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The Montana State Diabetes Plan will be used to increase awareness of and support for diabetes prevention and control efforts in the state. The MDP encourages the use of the plan to include:

- ◆ Distribute hard copies of the plan to key stakeholders including the diabetes advisory coalition members, diabetes specialists, diabetes educators, local public health officials, and IHS healthcare providers statewide.
- ◆ Make the state plan available online on the MDP website: [www.diabetes.mt.gov](http://www.diabetes.mt.gov).
- ◆ Encourage MDP partners and other participants to use the state plan to leverage funding and garner administrative support from their own organizations.
- ◆ Use the state plan and burden documents in grant applications for MDP funding and encourage partners to do the same.

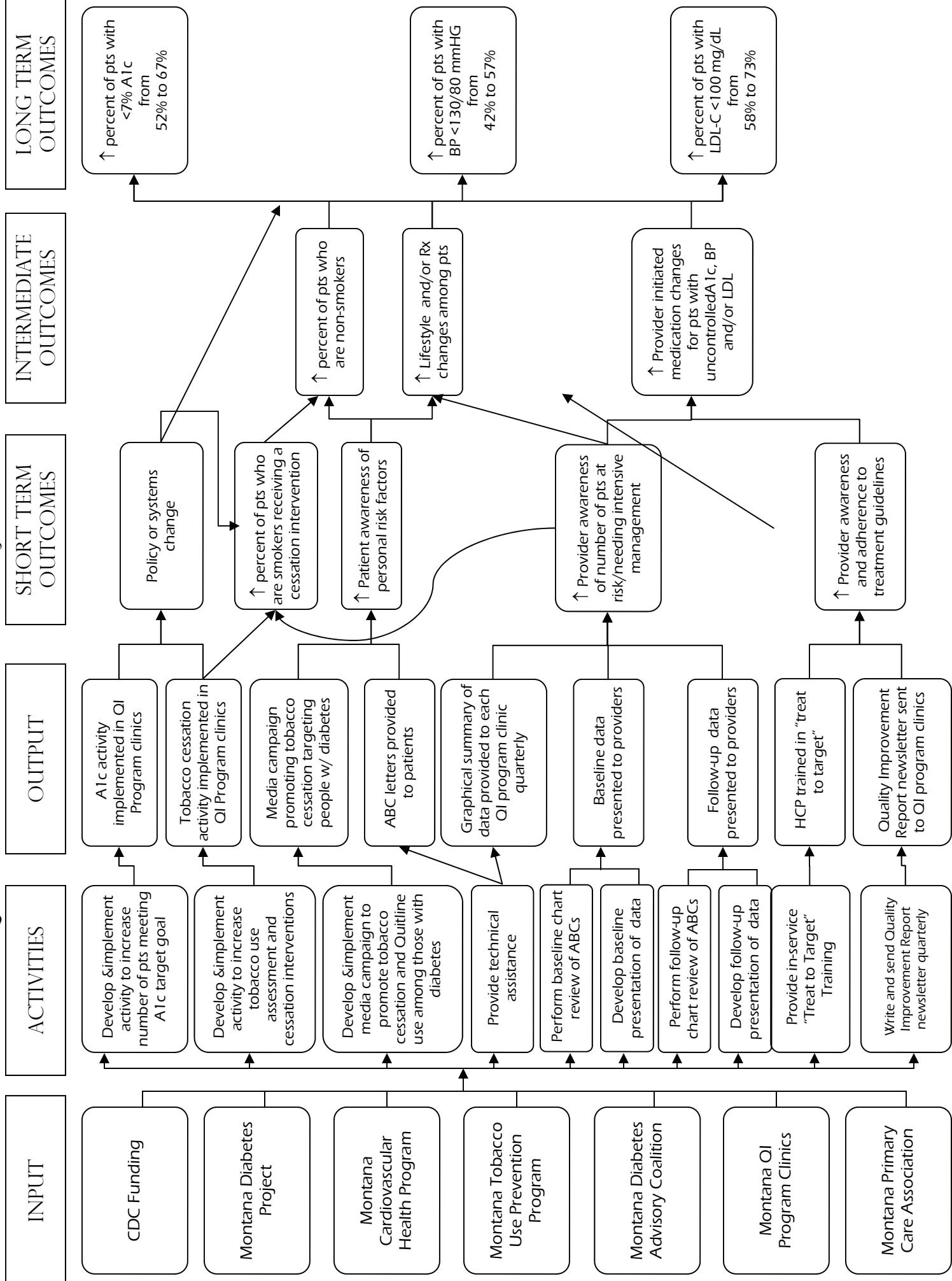


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2. Centers for Disease Control and Prevention. National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2007. Atlanta, GA: U.S. Department of Health and Human Services, Center for Disease Control and Prevention, 2008. (<http://apps.nccd.cdc.gov/DDTSTRS/FactSheet.aspx>)

# ABC QUALITY IMPROVEMENT PROJECT LOGIC MODEL



## PRIMARY PREVENTION PROGRAM LOGIC MODEL

